

What is claimed is:

1. A semi-crystalline, largely isotropic, porous pitch-based foam produced from a mesophase carbon derived from a petroleum or coal tar pitch exhibiting a softening point above about 300° C, and having a density of between about 0.1 and about 0.8 g/cm³.

2. The porous coal-based product of claim 1 wherein said coal tar or petroleum pitch exhibits a softening point between about 300°C and about 400° C.

3. The porous coal-based product of claim 1 having a compressive strength below about 6000 psi.

4. The porous coal-based product of claim 1 that has been carbonized.

5. The porous coal-based product of claim 1 that has been graphitized.

6. A method for producing a carbon foam from a mesophase carbon particulate derived from a petroleum or coal tar pitch exhibiting a softening point above about 300° C, comprising:

- A) placing said mesophase carbon particulate in a mold;
- B) heating said mesophase carbon particulate in said mold under a non-oxidizing atmosphere to a temperature of

between about 300° C and about 700° C and soaking at this temperature for a period of from about 10 minutes to about 1 hour to form a green foam; and

C) controllably cooling said green foam.

5

7. The method of claim 6 wherein said coal tar or petroleum pitch exhibits a softening point between about 300°C and about 400° C.

8. The method of claim 6 wherein said inert atmosphere is applied at a pressure of from about 0 psi up to about 500 psi.

9. The method of claim 6 wherein said temperature is achieved using a heat-up rate of between about 2° C to about 10° C per minute.

10. The method of claim 6 wherein said controlled cooling is accomplished at a rate of less than about 10° C/min to a temperature of about 100° C.

11. The method of claim 6 wherein said mesophase carbon particulate derived from a petroleum or coal tar pitch exhibiting a softening point above about 300° C is produced by thermal treatment or solvent extraction of said petroleum or coal tar pitch.

12. A semi-crystalline, largely isotropic, porous pitch-based foam produced from a mesophase carbon derived from a petroleum or coal tar pitch exhibiting a softening point above about 300° C, and having a density of between about 0.1 and about 0.8 g/cm³ produced by a method comprising:

- A) placing said mesophase carbon particulate in a mold;
- B) heating said mesophase carbon particulate in said mold under a non-oxidizing atmosphere to a temperature of between about 300° C and about 700° C and soaking at this temperature for a period of from about 10 minutes to about 1 hour to form a green foam; and
- C) controllably cooling said green foam.

13. The semi-crystalline, largely isotropic, porous pitch-based foam of claim 12 wherein said coal tar or petroleum pitch exhibits a softening point between about 300°C and about 400° C.

14. The semi-crystalline, largely isotropic, porous pitch-based foam of claim 12 wherein said inert atmosphere is applied at a pressure of from about 0 psi up to about 500 psi.

15. The semi-crystalline, largely isotropic, porous pitch-based foam of claim 12 wherein said temperature is achieved using a heat-up rate of between about 2° C to about 10° C per minute.

5 16. The semi-crystalline, largely isotropic, porous pitch-based foam of claim 12 wherein said controlled cooling is accomplished at a rate of less than about 10° C/min to a temperature of about 100° C.

10 17. The semi-crystalline, largely isotropic, porous pitch-based foam of claim 12 wherein said mesophase carbon particulate derived from a petroleum or coal tar pitch exhibiting a softening point above about 300° C is produced by thermal treatment or solvent extraction of said petroleum or coal tar pitch.

15

20